

MAKING THE TRANSITION FROM STATE TO LOCAL FOCUS IN SELECTING A SITE FOR A LOW LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY: THE ILLINOIS EXPERIENCE*

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THE State of Illinois has made substantial progress toward establishing a new low level radioactive waste disposal facility by 1993 as mandated by the federal Low Level Radioactive Waste Policy Act of 1980. This Act (as amended in 1985) requires each state to provide for the disposal of low level radioactive waste generated within its borders. Illinois joined with the Commonwealth of Kentucky to form the Central Midwest Interstate Low-Level Radioactive Waste Compact. Illinois is the host state for the Compact and, through the Illinois Department of Nuclear Safety, is responsible for selecting a site and establishing a facility for the safe management and disposal of low level radioactive waste generated within Illinois and Kentucky.

To fulfill its responsibilities, the Illinois Department of Nuclear Safety, assisted by the Battelle Memorial Institute of Columbus, Ohio, and Hanson Engineers, Inc. of Springfield, Illinois, has established a comprehensive program for site identification, characterization study, and final selection.

THE SITE SELECTION PROCESS

The site selection process consists of six steps:

Statewide assessment. The Illinois Department of Nuclear Safety first identified those counties which expressed a possible interest in learning more about the facility by contacting county leaders and local governments. Additionally, some counties containing potentially favorable areas were identified using general geological information. Twenty-one counties were initially selected for technical analysis and mapping in mid-1987. Two additional counties were mapped in early 1988.

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TABLE I. EXCLUSIONARY FACTORS

Areas with freestanding water
Areas either exceeding earthquake intensity Modified Mercalli Index (MMI) IX on bedrock of MMI VIII on unconsolidated material
Designated federally protected lands
Designated state protected lands
Areas prone to subsidence or landsliding
Areas within 100 year flood plain.

TABLE II. PERFORMANCE-RELATED
FAVORABILITY FACTORS

Areas of low permeability.
Areas with simple geologic structure
Areas without surficial sand and gravel deposits
Areas with low erosion
Areas away from surface water supplies
Areas without high-yield ground-water aquifers
Areas without shallow aquifers

Potential candidate area identification. The Illinois Department of Nuclear Safety has made extensive use of data generated by the Illinois State Geological Survey, the Illinois State Water Survey, the Illinois State Museum, the Illinois State Natural History Survey, and the Illinois Department of Energy and Natural Resources. Six exclusionary factors and seven performance-related favorability factors were identified for computerized mapping using the State Geographic Information System. These factors are outlined in Tables I and II, respectively. Each of these factors for the 23 counties was mapped and analyzed in detail. Seventy-two potential candidate areas at least four square miles in size were identified in the 23 counties. The distribution of these potential candidate areas among the counties is shown in Table III.

Area reconnaissance. During this step in the site selection process, a much more focused study was completed on selected potential candidate areas. Factors studied in this analysis were: topographical contours of the land and streams, evaluation of current and projected land use, evaluation of prime farmland, land ownership, and other environmental considerations. Also during this phase, limited drilling of boreholes (usually two or three per area identified) took place to gather further information about subsurface features.

Selection of candidate areas and alternative sites. Based upon data gathered during area reconnaissance, alternative sites of approximately 1,000 acres surrounded by candidate areas of approximately four square miles were

TABLE III. POTENTIAL CANDIDATE AREAS

<i>County</i>	<i>Number</i>	<i>County</i>	<i>Number</i>
Bond	4	Greene	4
Carroll	0	Iroquois	1
Cass	2	Knox	0
Champaign	5	Logan	6
Clark	5	Marshall	1
Cumberland	4	Menard	4
DeWitt	4	Peoria	0
Effingham	5	Piatt	1
Fayette	1	Sangamon	5
Ford	2	Vermilion	6
Gallatin	0	Warren	6
		Wayne	6

selected for detailed site characterization. These areas were determined to be potentially technically excellent and were politically acceptable to the local areas. The Illinois Department of Nuclear Safety is currently considering three alternative sites and, if possible, will identify a fourth alternative site.

Alternative site characterization. Detailed geological, hydrological, and environmental studies taking more than a year to complete are being conducted at three alternative sites. Two alternative sites are located in Clark County near the City of Martinsville, Illinois. A third alternative site is located near Geff, Illinois, in Wayne County.

Selection of the site. In late 1989, after a thorough analysis of all of the site characterization technical data, with full consideration of public comment and advice, and with the approval of the local government with jurisdiction, the Director of the Illinois Department of Nuclear Safety will select a technically excellent site for the low level radioactive waste disposal facility. The Westinghouse Electric Corporation has been selected to design, build, operate, and close the Illinois low level radioactive waste disposal facility. Westinghouse will submit a license application to build and operate the facility. The Illinois Department of Nuclear Safety will review the license application and, with the advice of the public and local government during the review process, will determine whether the site and facility will be safe for the permanent disposal of low-level radioactive waste.

CHANGING FROM STATE TO LOCAL FOCUS

The site selection process is a technical one that must be completed with intense public scrutiny and interest. Because the Illinois Department of Nu-

clear Safety is committed to a voluntary process, public perception of and participation in the site selection process strongly influences the direction and character of the entire program.

Other host states are approaching the point of identifying specific areas of their states in which to focus future studies. One of the key aspects of this point is the publication of maps of those specific areas. Maps will focus public attention on those areas and will alarm residents in or near the areas. People who have never been involved in the process will come forward to express their fears and concerns. What can responsible agencies do to inform, educate, and involve the public at this critical juncture? Learning from the experience of others is a valuable way of avoiding similar mistakes and incorporating successful methods.

When the Illinois Department of Nuclear Safety approached the point at which the maps would be published, we began extensive efforts to inform the public as to what factors were being evaluated and mapped and how the maps would be used to assist in identifying potentially technically excellent sites. Example maps of a nonexistent county were used to illustrate each factor. Many small meetings of 30–40 people were held so that there would be good communication throughout the process. The public information effort was extremely difficult because of the large number of areas involved, the geographical distance between areas, and the limited number of knowledgeable staff. Resources were spread so thinly that it is clear that the public information effort was ineffective in some areas and only a much larger staff or much more time would have been sufficient to do an effective job in all areas. Unfortunately, staff and time are resources of which most agencies are short.

It is also important that legislators and local elected officials be forewarned of any announcements in their areas. The Illinois Department of Nuclear Safety gave preliminary maps to state legislators on December 3, 1987, about one month prior to final publication. Most of these preliminary maps were prematurely published in area newspapers, which caused widespread interest and concern. In some cases the print media also chose to change map colors. Instead of red for exclusionary factors, blue for favorability factors, and white for potential candidate areas, some newspapers colored the potential candidate areas red (“target” areas) and all other areas were in black and white. This led to some general confusion about the difference between exclusionary and favorability factors. The result was that if there was any color on an area at all it became impossible to consider that area. Many favorability criteria could be mitigated by engineering features, but such a possibility seemed generally unacceptable to many people. In most areas

public pressure to withdraw from the process began to mount. Final maps were published in the January 1988 *Site Identification Plan and Status Report*. After publication public pressure forced all but a few counties to withdraw from consideration. The Illinois Department of Nuclear Safety honored its commitment not to consider those areas and stopped further evaluation of those areas. This allowed the Illinois Department of Nuclear Safety to focus its resources on fairly limited areas, and the public information effort became much more effective. On February 3, 1988 the Martinsville City Council unanimously passed a resolution asking the Illinois Department of Nuclear Safety to locate the low level radioactive waste disposal facility within its jurisdiction if a mutually agreeable and technically excellent site could be found. On March 8, 1988 the Wayne County Board also unanimously passed a similar resolution. Since that time the Illinois Department of Nuclear Safety has focused its efforts in those locations helping public understanding of the siting process to grow. With this growing understanding has come a growing public acceptance of the idea of hosting a low level radioactive waste disposal facility. With continued hard work, it appears likely that a politically acceptable and technically excellent site will be identified in late 1989.

CONCLUSION

Narrowing the siting focus from statewide assessment to identification of potential candidate areas is a critical point. The primary interest in the process changes from statewide interest groups to local citizens. Some local citizens will react negatively, claiming that not enough information was made available early enough. Others will react more positively, realizing what an enormous public information task it is for the responsible state agency. Most people will probably wait to gather additional information before making a decision. The Illinois Department of Nuclear Safety was able to respond quickly to this need by establishing good working relationships with local media, attending dozens of small informational meetings, providing tours of operational low level radioactive waste facilities, and working with local leaders and legislators to provide accurate and timely information. A state agency with responsibility for locating a low level radioactive waste facility must have the staff, resources, and flexibility to respond quickly to local needs and concerns. It is a tough but achievable task, demanding new and imaginative methods of informing and involving concerned people throughout the process.